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Gas and plasma dynamics of RF discharge jet of low pressure in a vacuum chamber with flat electrodes and inside tube, influence of RF discharge on the steel surface parameters

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Abstract

Researches results of the characteristics of the RF discharge jet of low pressure and the discharge influence on the surface modification of high speed and structural steels are introduced in the article. Gas dynamics, power and energy parameters of the RF low pressure discharge flow in the discharge chamber and the electrode gap are studied in the presence of the materials. Plasma flow rate, discharge power, the concentration of electrons, the density of RF power, the ion current density, and the energy of the ions bombarding the surface materials are considered for the definition of basic properties crucial for the process of surface modification of materials as they were put in the plasma jet. The influence of the workpiece and effect of products complex configuration on the RF discharge jet of low pressure is defined. The correlation of the input parameters of the plasma unit on the characteristics of the discharge is established.

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